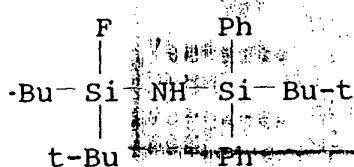


[(ethyl)ethyl)diphenylsilyl]-1-fluoro-, lithium salt, compd. with  
tetrahydrofuran (1:2) (9CI) (CA INDEX NAME)

CM 1

CRN 140173-62-2

CMF C<sub>24</sub> H<sub>38</sub> F N Si<sub>2</sub><sup>+</sup>. Li<sup>-</sup>



● Li

CM ethylidene)diphenylsilyl-1-fluoro-,  
tetrahydrofuran (1:2) (9CI) (CA INDEX NAME)

CRN 109-99-9

CMF C<sub>24</sub> H<sub>38</sub> O

140173-62-2  
C<sub>24</sub> H<sub>38</sub>-F N Si<sub>2</sub><sup>+</sup>. Li<sup>-</sup>



Ph

CC 29-6 (Organometallic and Organometalloidal Compounds)

Section cross-reference(s): 75

IT 140173-43-9P 140173-44-0P 140173-45-1P 140173-60-0P

140173-62-2P 140173-64-4P

(prepn. and lithiation of, lithium coordinated dimer from)

IT 140173-61-1P 140173-63-3P 140173-65-5P 140190-61-0P

140190-62-1P 140209-24-1P

(prepn. of)

L40 ANSWER 16 OF 31 HCA COPYRIGHT 2000 ACS

ACCESSION NUMBER:

113:78097 HCA

TITLE: 2

Derivation of fluorine-containing  
pyridinedicarboxylates. III. Regioselective  
anion chemistry at the 2- and 4-position

AUTHOR(S): C<sub>4</sub> M<sub>1</sub> J<sub>1</sub>

Chupp, John P.; Molyneaux, John M.

CORPORATE SOURCE:

Tech. Div., Monsanto Agric. Co., St. Louis, MO,  
63167, USA

SOURCE:

J. Heterocycl. Chem. (1989), 26(6), 1771-80

CODEN: JHTCAD; ISSN: 0022-152X

6 (Organometallic and Organometalloidal Compounds)  
Section cross-reference(s): 75

DOCUMENT TYPE:

Journal

PAGE:

English

OTHER SOURCE(S):

CASREACT 113:78097

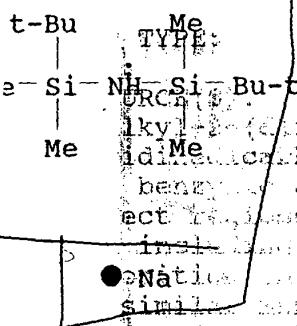
4-Alkyl-2-(difluoromethyl)-6-(trifluoromethyl)-3,5-pyridinedicarboxylates were deprotonated by various bases at either the benzylic carbanion of the 4-position, or at the 2-F<sub>2</sub>CH group to effect regioselective reaction of electrophiles. Weaker bases up to and including KOCMe<sub>3</sub> or NaN(SiMe<sub>3</sub>)<sub>2</sub> effected reaction at the 4-position in a Stobbe-type condensation with aldehydes and ketones. In similar manner CS<sub>2</sub>, CO<sub>2</sub>, alkyl halides, silyl halides, and C<sub>2</sub>C<sub>16</sub> produced highly functionalized derivs. In contrast, use of LiN(CHMe<sub>2</sub>)<sub>2</sub> and like bases selectively effected carbanion formation at the 2-position followed by reaction with the cited electrophiles.

128591-57-1

(silylation with, of di-Me methylipyridinedicarboxylate deriv.)

128591-57-1 HCA

Silanamine, 1-(1,1-dimethylethyl)-N-[(1,1-dimethylethyl)dimethylsilyl]-1,1-dimethyl-, sodium salt (9CI) (CA INDEX NAME)



CC 27-16 (Heterocyclic Compounds (One Hetero Atom))

IT 128591-57-1 (silylation with, of di-Me methylipyridinedicarboxylate deriv.)

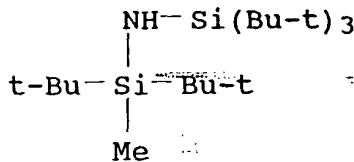
L40 ANSWER 17 OF 31 HCA COPYRIGHT 2000 ACS

ACCESSION NUMBER: 112:217030 HCA  
 TITLE: Isolation and characterization of  
 N,N-disilylarenethiurenamides  
 EX NAME:  
 AUTHOR(S): Murai, Toshiaki; Kimura, Koji; Kato, Shinzi  
 CORPORATE SOURCE: Fac. Eng., Gifu Univ., Gifu, 501-11, Japan  
 SOURCE: Chem. Lett. (1989), (11), 2017--18  
 CODEN: CMLTAG; ISSN: 0366-7022  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 OTHER SOURCE(S): CASREACT 112:217030

AB Amidation of RTeI (R = Ph, 2-naphthyl) with LiN(SiMe<sub>3</sub>)SiMe<sub>2</sub>R<sub>1</sub> (R<sub>1</sub> = Me, CMe<sub>3</sub>) in THF gave 76-93% RTeN(SiMe<sub>3</sub>)SiMe<sub>2</sub>R<sub>1</sub> (R = Ph, R<sub>1</sub> = Me, CMe<sub>3</sub>; R = 2-naphthyl, R<sub>1</sub> = Me) for the first time. Similarly PhTeN(CHMe<sub>2</sub>)<sub>2</sub> was also synthesized but the product decomps. above

Na

dimethylethyl)-, lithium salt (9CI) (CA INDEX NAME)



Li

- CC 29-6 (Organometallic and Organometalloidal Compounds)  
 IT 111470-18-9P  
     (prepn. and formation of THF adduct from)  
 IT 111470-19-0P  
     (prepn. and hydrolysis of)

L40 ANSWER 22 OF 31 HCA COPYRIGHT 2000 ACS

ACCESSION NUMBER: 111470-18-9P  
 TITLE: Synthesis and self-addition behavior of the  
       C-P=N-C(Si) type iminophosphines  
 AUTHOR(S): Niecke, Edgar; Lysek, Manfred; Symalla, Erhard  
 CORPORATE SOURCE: Fak. Chem., Univ. Bielefeld, Bielefeld,  
       D-4800/1, Fed. Rep. Ger.  
 SOURCE: -Bu-t  
       Chimia (1986), 40(6), 202-5  
 DOCUMENT TYPE: Journal  
 LANGUAGE: German  
 GI

Li

$$\begin{array}{c} \text{NR}^2 \\ \diagup \\ \text{R}-\text{P}=\text{N}-\text{R}^2 \\ \diagdown \\ \text{RP}-\text{NR}^2 \end{array}$$

6 (Organometallic and Organometalloidal Compounds)  
 470-18-9P  
     (prepn. and formation of THF adduct from)  
 470-19-0P  
     (prepn. and hydrolysis of)

AB Amination of  $\text{RPCl}_2$  [ $\text{R} = \text{CHMe}_2, \text{CMe}_3, \text{CH}(\text{SiMe}_3)_2, \text{Ph}$ ] with  $\text{R}_1\text{R}_2\text{NH}$  [ $\text{R}_1 = \text{H}, \text{MeSiMe}_3; \text{R}_2 = \text{SiMe}_3, \text{CH}_2\text{CMe}_3, 1\text{-adamantyl}, 2,4,6\text{-Me}_3\text{C}_6\text{H}_2, 2,4,6\text{-}( \text{Me}_3\text{C})_3\text{C}_6\text{H}_2$ ] gave  $\text{RPClNR}_1\text{R}_2$  (I). Base-catalyzed or thermal elimination of  $\text{RCl}$  from I gave  $\text{RP:NR}_2$  which undergo 2+1 cycloaddn. to give dimers II ( $\text{R} = \text{CMe}_3, \text{R}_2 = \text{SiMe}_3, 1\text{-adamantyl}, 2,4,6\text{-Me}_3\text{C}_6\text{H}_2$ ). II ( $\text{R} = \text{CMe}_3, \text{R}_2 = \text{SiMe}_2\text{CMe}_3$ ) was prep'd. by the elimination of  $\text{Me}_3\text{SiCl}$  from I ( $\text{R} = \text{CMe}_3, \text{R}_1 = \text{Me}_3\text{Si}, \text{R}_2 = \text{SiMe}_2\text{CMe}_3$ ). Elimination of  $\text{RCl}$  from I ( $\text{R} = \text{CMe}_3, \text{R}_1 = \text{H}, \text{SiMe}_3, \text{R}_2 = \text{CH}_2\text{CMe}_3$ ) did not give 2+1 dimer but  $\text{Me}_3\text{CCH:NP}(\text{CMe}_3)\text{P}(\text{CMe}_3)\text{NHCH}_2\text{CMe}_3$ .

TYPE

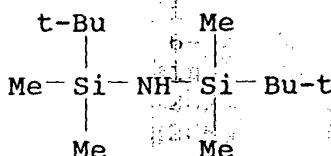
?

109874-44-4

(amination by, of dichlorophosphines)

RN 109874-44-4 HCA

CN Silanamine, 1-(1,1-dimethylethyl)-N-[(1,1-dimethylethyl)dimethylsilyl]-1,1-dimethyl-, lithium salt (9CI) (CA INDEX NAME)



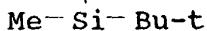
● Li

IT 69773-53-1

(amination by, of trichlorophosphine)

RN 69773-53-1 HCA

CN Silanamine, N-[(1,1-dimethylethyl)dimethylsilyl]-1,1,1-trimethyl-, lithium salt (9CI) (CA INDEX NAME)



● Li

CC 29-7 (Organometallic and Organometalloidal Compounds)

IT 88-05-1, Mesidine 4039-32-1, Lithium bis(trimethylsilyl)amide  
5813-64-9, Neopentylamine 18270-42-3 68295-36-3 102745-24-4  
109874-25-1 109874-44-4

(amination by, of dichlorophosphines)

IT 69773-53-1 HCA

(amination by, of trichlorophosphine)

L40 ANSWER 23 OF 31 HCA COPYRIGHT 2000 ACS

ACCESSION NUMBER: 106:214024 HCA

TITLE: Four-membered SiNSiO rings by lithium fluoride  
SiMe<sub>3</sub> elimination. Crystal structure of an  
eight-membered FLiNSi ring

## PATENT COOPERATION TREATY

PCT

**NOTIFICATION OF ELECTION**  
 (PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner  
 US Department of Commerce  
 United States Patent and Trademark  
 Office, PCT  
 2011 South Clark Place Room  
 CP2/5C24  
 Arlington, VA 22202  
 ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 07 March 2001 (07.03.01)	To:  Commissioner US Department of Commerce United States Patent and Trademark Office, PCT 2011 South Clark Place Room CP2/5C24 Arlington, VA 22202 ETATS-UNIS D'AMERIQUE  in its capacity as elected Office
International application No. PCT/US00/11415	Applicant's or agent's file reference 00246/517WO1
International filing date (day/month/year) 28 April 2000 (28.04.00)	Priority date (day/month/year) 29 April 1999 (29.04.99)
<b>Applicant</b>  GORDON, Roy, G. et al	

1. The designated Office is hereby notified of its election made:

in the demand filed with the International Preliminary Examining Authority on:

31 October 2000 (31.10.00)

in a notice effecting later election filed with the International Bureau on:

\_\_\_\_\_

2. The election  was

was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland  Facsimile No.: (41-22) 740.14.35	Authorized officer  R. E. Stoffel  Telephone No.: (41-22) 338.83.38
---------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To: MARY ROSE SCOZZAFAVA  
CLARK @ ELBING, LLP  
176 FEDERAL STREET  
BOSTON, MASSACHUSETTS 02110-2214

OCT 16 2001

PCT

**RECEIVED**  
INTELLECTUAL PROPERTY DEPARTMENT

OCT 09 2001

**CLARK & ELBING**

## NOTIFICATION OF TRANSMITTAL OF INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Rule 71.1)

Date of Mailing  
(day/month/year)

**05 OCT 2001**

Applicant's or agent's file reference  00246/517W01	IMPORTANT NOTIFICATION	
International application No.  PCT/US00/11415	International filing date (day/month/year)  28 APRIL 2000	Priority Date (day/month/year)  29 APRIL 1999
Applicant  PRESIDENT AND FELLOWS OF HARVARD COLLEGE		

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

#### 4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices)(Article 39(1))(see also the reminder sent by the International Bureau with Form PCT/IB/801).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

*HALE & DORR DOCKETING*

RE: 42697.127 W01

Action Date: \_\_\_\_\_

Action to be Taken: \_\_\_\_\_

Docketed by: Oy On: 10-17-01

Name and mailing address of the IPEA/US  Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231  Facsimile No. (703) 305-3250	Authorized officer  JOSEPH D. ANTHONY  Telephone No. (703) 308-0661	DEBORAH THOMAS PARALEGAL SPECIALIST
----------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------	----------------------------------------

PATENT COOPERATION TREATY

**PCT**

REC'D 09 OCT 2001

INTERNATIONAL PRELIMINARY EXAMINATION REPORT PCT

(PCT Article 36 and Rule 70)

5

Applicant's or agent's file reference 00246/517W01	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US00/11415	International filing date (day/month/year) 28 APRIL 2000	Priority date (day/month/year) 29 APRIL 1999
International Patent Classification (IPC) or national classification and IPC IPC(7): H01L 21/00; B05D 3/01, 3/12; C09K 3/00 and US Cl.: 427/453, 226; 252/183.11, 183.13		
Applicant PRESIDENT AND FELLOWS OF HARVARD COLLEGE		

<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>4</u> sheets.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority. (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of _____ sheets.</p> <p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li>I <input checked="" type="checkbox"/> Basis of the report</li> <li>II <input type="checkbox"/> Priority</li> <li>III <input type="checkbox"/> Non-establishment of report with regard to novelty, inventive step or industrial applicability</li> <li>IV <input type="checkbox"/> Lack of unity of invention</li> <li>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability, citations and explanations supporting such statement</li> <li>VI <input type="checkbox"/> Certain documents cited</li> <li>VII <input type="checkbox"/> Certain defects in the international application</li> <li>VIII <input type="checkbox"/> Certain observations on the international application</li> </ul>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Date of submission of the demand 31 OCTOBER 2000	Date of completion of this report 22 AUGUST 2001
Name and mailing address of the IPEA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231	Authorized officer JOSEPH D. ANTHONY Telephone No. (703) 308-0661
Facsimile No. (703) 305-3230	DEBORAH THOMAS PARALEGAL SPECIALIST <i>[Signature]</i>

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US00/11415

**I. Basis of the report**1. With regard to the **elements** of the international application: \* the international application as originally filed the description:pages 1-19 \_\_\_\_\_, as originally filed  
pages NONE \_\_\_\_\_, filed with the demand  
pages NONE \_\_\_\_\_, filed with the letter of \_\_\_\_\_ the claims:pages 20-24 \_\_\_\_\_, as originally filed  
pages NONE \_\_\_\_\_, as amended (together with any statement) under Article 19  
pages NONE \_\_\_\_\_, filed with the demand  
pages NONE \_\_\_\_\_, filed with the letter of \_\_\_\_\_ the drawings:pages NONE \_\_\_\_\_, as originally filed  
pages NONE \_\_\_\_\_, filed with the demand  
pages NONE \_\_\_\_\_, filed with the letter of \_\_\_\_\_ the sequence listing part of the description:pages NONE \_\_\_\_\_, as originally filed  
pages NONE \_\_\_\_\_, filed with the demand  
pages NONE \_\_\_\_\_, filed with the letter of \_\_\_\_\_2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.  
These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is: the language of a translation furnished for the purposes of international search (under Rule 23.1(b)). the language of publication of the international application (under Rule 48.3(b)). the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing: contained in the international application in printed form. filed together with the international application in computer readable form. furnished subsequently to this Authority in written form. furnished subsequently to this Authority in computer readable form. The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished. The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.4.  The amendments have resulted in the cancellation of: the description, pages NONE the claims, Nos. NONE the drawings, sheets/fig NONE5.  This report has been drawn as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

\*\*Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US00/11415

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. statement**

Novelty (N)	Claims	<u>7, 10-11, and 16-22</u>	YES
	Claims	<u>1-6, 8-9, and 12-15</u>	NO
Inventive Step (IS)	Claims	<u>16-22</u>	YES
	Claims	<u>1-15</u>	NO
Industrial Applicability (IA)	Claims	<u>1-22</u>	YES
	Claims	<u>NONE</u>	NO

**2. citations and explanations (Rule 70.7)**

Claims 1-6, 9, and 12-15 lack novelty under PCT Article 33(2) as being anticipated by Derwent Publication Ltd., Accession Number 118:78097, Taken from J. Hetrocycl. Chem (1989), 26(6), pages 1771-1780 which teach compositions that contain  
**Silanamine, 1-(1,1-dimethylethyl)-N-[ (1,1-dimethylethyl)dimethylsilyl]-1,1-dimethyl, sodium salt.**

Claims 1-6, 8, and 12-15 lack novelty under PCT Article 33(2) as being anticipated by Derwent Publication Ltd. Accession Number 107:96786, Taken from Chimia (1986), 40(6), pages 202-205 which teach compositions that contain  
**Silanamine, 1-(1,1-dimethylethyl)-N-[ (1,1-dimethylethyl)dimethylsilyl]-1,1-dimethyl, lithium salt.**

Claims 7, and 10-11 lack an inventive step under PCT Article 33(3) as being obvious over Derwent Publication Ltd., Accession Number 118:78097, Taken from J. Hetrocycl. Chem (1989), 26(6), pages 1771-1780, and Derwent Publication Ltd. Accession Number 107:96786, Taken from Chimia (1986), 40(6), pages 202-205.

Both Derwent Publications have been described above. They differ from applicant's claimed invention in the following ways: 1) there is no direct teaching to making or using silanamines that correspond to applicant's structure of claim 7., 2) there is no direct disclosure to the use of potassium in lieu of sodium or lithium, and 3) there is no direct disclosure to making silanamine type alkali metal salts that correspond to applicant's claimed silanamine alkali metal salts where applicant's subscript "n" is in the range of 2 to 8.

It would have been obvious to one having ordinary skill in the art to use the individual disclosures of either Derwent Publication as motivation to actually make compositions that contain silanamines that correspond to applicant's claimed silanamines. This is obvious because both Derwent Publications are deemed to broadly disclose the production and use of silanamines that encompass applicant's claimed silanamines.

Claims 1-15 meet the criteria set out in PCT Article 33(4). (Continued on Supplemental Sheet.)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US00/11415

**Supplemental Box**

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: Boxes I - VIII

Sheet 10

V. 2. REASoNED STATEMENTS - CITATIONS AND EXPLANATIONS (Continued):  
because the claimed compositions are deemed to be useful in a vapor deposition process to deposit a material containing an alkali metal.

Claims 16-22 meet the criteria set out in PCT Article 33(2)-(4), because the above prior art does not teach or fairly suggest applicant's claimed compositions and vapor deposition process to deposit a material containing an alkali metal.

----- NEW CITATIONS -----

NONE

**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
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AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
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CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
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CN	China	KR	Republic of Korea	RO	Romania		
CU	Cuba	KZ	Kazakhstan	RU	Russian Federation		
CZ	Czech Republic	LC	Saint Lucia	SD	Sudan		
DE	Germany	LI	Liechtenstein	SE	Sweden		
DK	Denmark	LK	Sri Lanka	SG	Singapore		
EE	Estonia	LR	Liberia				



PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION  
International Bureau

## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>7</sup> : <b>H01L 21/00, B05D 3/02, 3/12, C09K 3/00</b>		A1	(11) International Publication Number: <b>WO 00/67300</b> (43) International Publication Date: <b>9 November 2000 (09.11.00)</b>
<p>(21) International Application Number: <b>PCT/US00/11415</b></p> <p>(22) International Filing Date: <b>28 April 2000 (28.04.00)</b></p> <p>(30) Priority Data: 60/131,527 <b>29 April 1999 (29.04.99)</b> US</p> <p>(63) Related by Continuation (CON) or Continuation-in-Part (CIP) to Earlier Application US <b>60/131,527 (CIP)</b> Filed on <b>29 April 1999 (29.04.99)</b></p> <p>(71) Applicant (<i>for all designated States except US</i>): PRESIDENT AND FELLOWS OF HARVARD COLLEGE [US/US]; 17 Quincy Street, Cambridge, MA 02138 (US).</p> <p>(72) Inventors; and (75) Inventors/Applicants (<i>for US only</i>): GORDON, Roy, G. [US/US]; 22 Highland Street, Cambridge, MA 02138 (US). BROOMHALL-DILLARD, Randy, N., R. [US/US]; 765 Somerville Avenue, Apt. 1, Somerville, MA 02143 (US).</p> <p>(74) Agent: SCOZZAFAVA, Mary, Rose; Clark &amp; Elbing LLP, 176 Federal Street, Boston, MA 02110-2214 (US).</p>		<p>(81) Designated States: CA, JP, KR, US, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).</p> <p><b>Published</b> <i>With international search report.</i></p>	
<p>(54) Title: LIQUID PRECURSORS FOR FORMATION OF MATERIALS CONTAINING ALKALI METALS</p> <p>(57) Abstract</p> <p>Volatile liquid precursors are provided for the formation of alkali metal-containing materials. The liquid precursors comprise alkali metal amides. For example, a volatile liquid compound was formed by reacting butyl lithium with bis(ethyldimethylsilyl)amine. Films containing alkali metals are deposited from vapors of the precursor liquids and, optionally, oxygen or other sources of oxygen. This process may be used to deposit lithium niobate films having non-linear optical properties. The liquid precursors may also be used for spray coating, spin coating and sol-gel deposition of materials containing alkali metals.</p>			

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US00/11415

## A. CLASSIFICATION OF SUBJECT MATTER

[IPC(7) :H01L 21/00; B05D 3/02, 3/12; C09K 3/00  
US CL : 427/453, 455, 226; 252/183.11, 183.13]

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 427/453, 455, 226, 452, 99, 124, 126.1; 252/183.11, 183.13; 260/665R

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WEST USPAT, STN REGISTRY

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	Database Registry on STN: Derwent Publication Ltd., Acession Number 113:78097, Taken from J. Hetrocycl. Chem. (1989), 26(6), pages 1771-1780.	1-15 ----
A	Database Registry on STN, Derwent Publication Ltd., Accesion Number 107:96786, Taken from Chimia (1986), 40(6), pages 202-205.	16-22 ----
X	Database Registry on STN, Derwent Publication Ltd., Accesion Number 107:96786, Taken from Chimia (1986), 40(6), pages 202-205.	1-15 ----
A	US 5,376,405 A (DOAN et al.) 27 December 1994, see the abstract, examples, and claims.	1-22
A	US 5,412,129 A (DICAROLIS) 02 May 1995, see the abstract, examples, and claims.	1-22

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier document published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means		
"P" document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search  
19 JUNE 2000

Date of mailing of the international search report

09 AUG 2000

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## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US00/11415

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5,581,396 A (KUBOTA et al.) 03 December 1996, see the abstract, examples, and claims.	1-22
A	US 5,726,294 A (Rees, Jr.) 10 March 1998, see the abstract, examples, and claims.	1-22
A,P	US 5,980,983 A (GORDON) 09 November 1999, see the abstract, examples, and claims.	1-22